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### ***THE GRIFFITH MICROSCOPE.***

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The Griffith microscope of August, 1892, retains all of the valuable original features of the Griffith *Club* microscope of earlier date, and which is still manufactured.

Important additions increasing its usefulness for special lines of investigation and adding much to the cost of manufacture necessitate some change in name for distinction; therefore the word *Club* has been omitted in the name of the new stand.

The turn-table and the lamp attachments, also the "endless" micrometer adjustment and the portability have been retained. In the new pattern the diagonal rack and pinion, so popular in the Seibert, Leitz, and other stands, has been adopted, and the micrometer adjustment has been made exceedingly slow in action. The most important improvements have been made in the substage, and they are clearly shown in the accompanying cuts. The body of the microscope is continued below the stage, making a perfectly central and firm support for the substage and its accessories. The ring is provided with centering screw for the condenser, with a screw-clamp to hold it in place, and with a secure hinge allowing it to be quickly turned aside or removed out of the way, if desired.

I am no advocate of a multiplicity of misleading names to be given to scientific instruments which are almost alike in construction and each of which is capable of doing in a satisfactory manner all of the work of the others. There are, however, certain improvements and changes often made in manufactured articles increasing or decreasing their cost in a marked degree and their real value that some designation, as No. 1, No. 2, etc., is imperative, but, in my opinion, we, as members of the American Microscopical Society, should try to educate those who long for first-class scientific instruments, but who are limited in means, that any good microscope is sufficient for the physician, and also for the teacher, the pharmacist, and for nearly every department of microscopical work. The Griffith microscope, which has been finished since the opening of this



convention, is no exception to my statement ; it is simply a greatly improved Griffith Club instrument, and in order to distinguish it from previous patterns I have omitted Club from the name. The principal change is in the substage, which does not differ greatly from some substages now in use. Instead of being attached to the stage it is now made entirely separate and so that it can be very securely clamped, swung to one side, or entirely removed in a moment's time out of the way and some other accessory put in its place, if desired. It has centering screws, so that all accessories may be easily and accurately centered. Its support is a continuation of that portion of the body which supports the stage ; therefore it is always in position and absolutely central. A groove is milled in the back of this, to which is fitted a metal slide, which extends above and also below the stage, to the bottom of which is fastened the substage bar, and to the top, which is above the stage, is a projecting rod for the easy adjustment of the substage for distance. I think that experience will demonstrate that this is much more convenient than the rod below the stage.

The substage fitting is of standard size, and so constructed that it may be turned either side up. The Iris diaphragm may be added without trouble.

The stage itself has been slightly increased in diameter, and it is set back nearer the standard.

The fine adjustment has been made very slow in action.

The rack and pinion are of the favorite diagonal pattern which is used on the Zeiss and Leitz, Seibert, and other foreign stands, and which will not allow the cogs ever to be out of contact.

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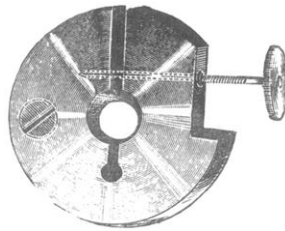
#### ***SUBSTAGE DIAPHRAGM.***

It is seldom that a large aperture is needed in the diaphragm. I have ordered a disk with a central aperture of sufficient diameter for all ordinary use. The disk is milled with a central canal, which is fitted with two metal slides, with the ends cut so they leave a lozenge-shaped opening. By pushing the slides together the aperture may be entirely closed. When a full opening is required the entire disk with diaphragm may be swung aside. This is not claimed to be fully equal to the Iris diaphragm, but to take its place at a much less cost.

**GRIFFITH MICROSCOPE LOCK.**

Within one year I was unfortunate in losing nearly \$100 worth of choice slides, such as Fasoldt's bands of fine rulings, etc. Within six months I had two objectives crushed by parties who borrowed them. One was a W. I.  $\frac{1}{10}$ , class E, of E. Gundlach, and I was the owner of it. The other was a H. I.  $\frac{1}{12}$ , listed at \$135, belonging to the Gundlach Optical Company. The Griffith focus indicator was invented to prevent such accidents.

I now have the pleasure of showing to you a lock which, so far as I am aware, is entirely original in its application to the microscope. It consists of a metal disk with a central aperture for the pinion of the microscope. This is split in half nearly across it and fitted with



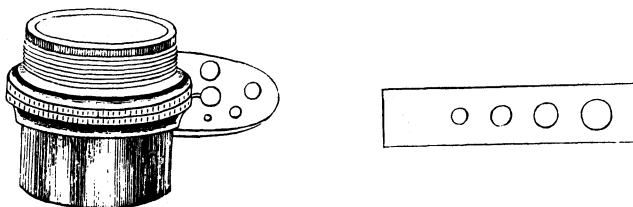
a set-screw, which may be made to close the button and to grasp the pinion firmly. Releasing the screw releases the pinion. This button or lock is fastened to the stand by means of a single screw at one side of the division.

**GRIFFITH COVER-GLASS MICROMETER.**

I have made a device to be attached as an extra to my turn-table—a cover-glass micrometer—which, when perfected, I have confidence will be of great value. A fine needle is pivoted to the surface of the turn-table with the pivot near the larger end, and a stop is set near this short arm. A graduated metal arc is placed at the end of the long arm to give the thickness of the cover; also to protect the indicator or needle.

**GRIFFITH OBJECTIVE DIAPHRAGM.**

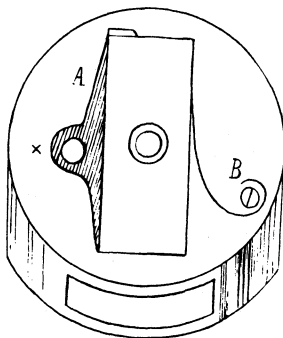
Sometimes a diaphragm is desirable for wide-angled objectives, and to secure such an accessory I have utilized the focus-indicator support. Just under the Society screw a thin slit is cut and a wheel



diaphragm introduced. If preferred, the slit can be cut through the center of the tube and a long diaphragm, made from a thin, wide dental saw, may be passed through.

**THE GRIFFITH WARMING TURN-TABLE.**

The Griffith warming turn-table has a milled space between the two surfaces for the introduction of a piece of heated metal. The slide supports are the thin metal strip (*A*) and the spring (*B*). The



aperture in the strip at *x* is made larger than the set-screw that passes through it, allowing the strip to be moved for decentering purposes. The surface of the turn-table has a line marked on it one-half inch from the center in width and one and one-half inches from the center in length, indicating where the strip should be set for new work.